9.0 Data Center Facilities Requirements

Instructions to Vendors: *Vendor shall address in its proposal the solution it proposes to address the Commonwealth's requirements for Data Center Facilities as specified in Section 4 of the Comprehensive Infrastructure Agreement and shall comply with all of the requirements set forth in Schedule 4 thereto.*

Unless specifically noted in the appropriate tables below, Vendor agrees to perform, for the environment (described in Schedule 4), the services and associated roles and responsibilities (as outlined within Schedule 4) is not considered to be all-inclusive. Vendor will be responsible for the complete life-cycle management of these services, unless otherwise noted. Vendor shall clearly indicate in the tables below if it does not accept the requirements defined in Schedule 4. Commonwealth considers the Vendor to agree to all Schedule 4 unless identified herein. Vendor should add rows to the tables below as necessary. Absence of issues will constitute agreement for those items not herein addressed, and will be off the table for further negotiation.

*[**Note to Vendor:** the Commonwealth wishes to explore with Vendor various financing/ ownership/leasing options potentially available with respect to the data centers.]*

Why the Northrop Grumman Team? A significant portion of the information technology infrastructure that allows the Commonwealth agencies to service their customers will reside in the facilities provided through this VITA PPEA partnership agreement. The reliability of this infrastructure is the lifeblood for allowing the Commonwealth agencies the ability to provide critical health and welfare services to the people of Virginia every day. The Northrop Grumman Team recognizes the need for VITA to be able to provide to its customer agencies a level of reliability that will exceed their expectations yet still remain affordable. Our solution provides for two new facilities that will meet and exceed VITA's requirements for day-to-day reliability and recovery from every form of disaster.

Our proposed **Redacted** will be a technology showplace that includes VITA offices and a state-of-the-art Tier III primary data center. This Tier III data center will be constructed to provide 99.982% availability to the IT infrastructure it supports. Additionally, we are constructing a customized facility in **Redacted** to support a VITA enterprise help desk and a backup data center hot site. This hot site will be constructed to allow for any level of recovery requirement from automated fail over, to hours, to days, or to weeks based on affordability and best value to VITA's customers. The Northrop Grumman Team is committed to supporting the Commonwealth's goals for employment and technology development in **Redacted**

While successful consolidation and transformation of information technology requires skill, experience, and proven processes, it will not be successful without effective facilities and infrastructure. The Northrop Grumman Team will provide:

- Data center facilities that are secure, scaleable and hardened against both natural and man-made disasters
- Network connectivity that is secure, scaleable and redundant to provide the highest levels of availability
- Offices, meeting rooms, training facilities, and break areas customized into a cooperative co-located work setting to maximize VITA and Northrop Grumman Team working relationships
- Business continuity and disaster recovery facilities that are designed to support VITA's customer agencies' needs for continuous operations

Having successfully consolidated and transformed our own infrastructure environment to efficiently provide services to 125,000 employees, Northrop Grumman is well aware that a data center facility must be secure, hardened and scaleable, and provide a healthy environment for those who work in the facility.

In building a true public-private partnership with VITA, Northrop Grumman will construct joint-use facilities to support VITA and our internal operations. By leveraging Northrop Grumman operations, our proposal shares resources and reduces VITA's financial investments while providing two new operations centers located in the **Redacted** area and **Redacted** Virginia. This provides a savings to VITA, as the costs associated with providing a primary Tier III data center facility and a hot site disaster recovery facility is spread across a combination of Northrop Grumman and VITA operations.

By implementing a dual data center approach, shown in **Exhibit 9-1**, we build reliability into the delivery of information services in the event of a disaster. The Commonwealth can focus on their core mission in serving its citizens while the Northrop Grumman Team can partner with VITA to provide best value services and reliability.

Redacted

Exhibit 9-1 Commonwealth of Virginia Facility Locations

Text Redacted.

In this section we present an overview of our facilities response, including data center facilities services in **Section 9.1**, network services connectivity in **Section 9.2**, VITA office space requirements in **Section 9.3**, and backup data center requirements in **Section 9.4**.

9.1 Data Center Facilities Services

Vendor shall reference and provide detailed accepted and/or proposed service environment components as attachments to the proposal where required and as indicated in Schedule 4.

Northrop Grumman proposes to construct two new facilities to meet VITA's requirements. **Exhibit 9-2** depicts the **Redacted** and **Exhibit 9-3** depicts the **Redacted**. Trends in the data center business caution companies about retrofitting existing office sites, because they were not built to accommodate the demands of today's data centers in the areas of electrical, cooling, ventilation, and monitoring (reference Processor Publication, March 11, 2005, Vol. 27, No. 10). Trying to accommodate these demands in an existing office building more often than not exceeds the cost of building a new site and fails to meet the requirements of new technology solutions, with little concern for the future. Northrop Grumman recognizes that VITA is well aware that the availability of infrastructure support systems is a direct result of the reliability of the data center and building infrastructure. We have used current and projected standards from organizations such as the Gartner Group (reference Gartner Publication ID G00127434, dated April 25, 2005) and The Uptime Institute to formulate our data center design specifications. Northrop Grumman will design and construct a Tier III data center and associated office complex that meets or exceeds the reliability, security, operational, and capacity requirements necessary to fulfill VITA's current and future needs. A Tier III data center is defined by The Uptime Institute as having multiple power and cooling distribution paths, but having only one path active. Tier III also provides redundant components that are maintainable concurrently and an availability level of 99.982%. The existing Richmond Plaza Building data center, by comparison, does not meet some basic Tier I standards. For instance, it does not have sufficient ability to exhaust the heat generated by computing hardware. Only about half of the raised floor can be used for computing

equipment. This is a prime example of inappropriately trying to retrofit an existing facility into a data center, when it was not designed to support modern computing technology. The principal goals of our facilities proposal are to ensure we meet reliability, secure ability, flexibility, and scalability objectives for VITA, today as well as in the future.

The selected sites are designated as technology parks that are designed to attract national and international businesses due to the quality of life, which is extremely attractive to personnel with technical job skills. Likewise, constructing at the proposed sites will be a beacon to other firms seeking to relocate to reliable and attractive facilities. The success of Northrop Grumman and VITA will attract other investments to the technology parks. As an example, Northrop Grumman's Lafayette Colorado Facility was built ground up in 1998. Since that time, four additional buildings have been constructed and occupied adjacent to the Northrop Grumman site. These buildings house a major Kaiser Permanente medical center and technology centers for Level 3, STK, and Sun Micro Systems. At the same time, Northrop Grumman has built an additional facility at this location and doubled our staffing at this site.

Northrop Grumman has worked with the **Redacted** to establish locations for the aforementioned sites, contributing to the economic goals and objectives of the Commonwealth of Virginia. Likewise, Northrop Grumman has teamed with local Virginia companies to address the requirements for architectural and engineering, general contracting, and operations and maintenance of the new facilities. These companies include McKinney and Company, an architectural and engineering (A&E) firm located in Ashland, Virginia; Whiting-Turner, a general contractor with Virginia headquarters in Richmond, Virginia; and Lee Technologies, headquartered in Fairfax, Virginia. Lee Technologies is a facilities management firm that specializes in mission-critical facilities.

Exhibit 9-2 Redacted
The new facility is a state-of-the-art Tier III data center.

The new facilities design approach will use the latest preengineered steel and precast technology to minimize the construction and transition schedules, yet satisfy the requirement for a "hardened" structure. The intent is to vacate the Richmond Plaza Building site as soon as possible. Our plan is to relocate all personnel and migrate the mainframe and server workloads before November 1, 2006. This will provide the ability to recover from any unforeseen difficulties prior to the VITA required date of December 31, 2006.

In accordance with the Comprehensive Infrastructure Agreement, **Section 3.21**, the Northrop Grumman Team will perform all of the services only from or at locations within the geographic boundaries of the Commonwealth.

Exhibit 9-3 Redacted
This new facility will contain the backup data center and the enterprise help desk.

Richmond Enterprise Solutions Center

Northrop Grumman will construct a primary data center and office complex **Redacted**. Completion of the construction will meet the scheduled relocation of the computing infrastructure and employees from the existing Richmond Plaza Building to comply with the objectives of VITA to vacate the site no later than December 31, 2006.

The design strategy for the data center **Redacted** is to provide a fault-tolerant environment that meets current industry standards as defined by the Gartner Group and to meet Tier III standards as defined by The Uptime Institute for mission-critical facilities. As detailed in our response to the Comprehensive Infrastructure Agreement Schedule 4 (described in detail in **Section 11.3.13**), Northrop Grumman will provide data center facilities that will meet or exceed the requirements for a hardened site, such as redundant power systems, redundant uninterrupted power supply (UPS) and motor generator systems, and N+1 redundancy in heating, ventilation, and air conditioning (HVAC) systems. In addition, Northrop Grumman will provide the latest technology in fire detection and prevention systems, water detection systems, and physical security systems. Our proposal provides a low-risk site location as required by VITA.

☑ Check if Vendor agrees with Schedule 4, except for the elements listed in **Exhibit 9-4**.

Data Center Facilities Requirements Issues			
Item #	**Reference #**	**Issue**	**Vendor Proposed Solution/Rationale**
Redacted from Public Document – Proprietary and Confidential			
End of Table			

Exhibit 9-4 Data Center Facilities Requirements Issues (Table 53)

9.1.1 RPB Data Center Relocation Requirement

☑ Check if Vendor agrees with all elements of Schedule 4 – Section 1.2, except for the elements listed in **Exhibit 9-5**.

Data Center Facilities Requirements Issues			
Item #	**Reference #**	**Issue**	**Vendor Proposed Solution/Rationale**
Redacted from Public Document – Proprietary and Confidential			
End of Table			

Exhibit 9-5 Data Center Facilities Requirements Issues (Table 54)

9.1.2 Physical Site

☑ Check if Vendor agrees with all elements of Schedule – Section 1.2, including all subsections, except for the elements listed in **Exhibit 9-6**.

Physical Site Requirements Issues			
Item #	Reference #	Issue	Vendor Proposed Solution/Rationale
Redacted from Public Document – Proprietary and Confidential			
End of Table			

Exhibit 9-6 Physical Site Requirements Issues (Table 55)

9.2 Network Services Connectivity

9.2.1 Network Back-End Connectivity

☑ Check if Vendor agrees with all elements of Schedule 4 – Section 2.1, except for the elements listed in **Exhibit 9-7**.

Network Back-End Connectivity Requirements Issues			
Item #	Reference #	Issue	Vendor Proposed Solution/Rationale
Redacted from Public Document – Proprietary and Confidential			
End of Table			

Exhibit 9-7 Network Back-End Connectivity Requirements Issues (Table 56)

9.2.2 Engineering/Development

☑ Check if Vendor agrees with all elements of Schedule 4 – Section 2.2, except for the elements listed in **Exhibit 9-8**.

Network Back-End Connectivity Requirements Issues			
Item #	Reference #	Issue	Vendor Proposed Solution/Rationale
Redacted from Public Document – Proprietary and Confidential			
End of Table			

Exhibit 9-8 Network Back-End Connectivity Requirements Issues (Table 57)

9.2.3 Asset Acquisition and Network Provisioning

Northrop Grumman will provide network connectivity for the new data centers. This will include voice and data throughout the facility. The data center will be served by multiple network circuits, including a Synchronous Optical Network (SONET) 622 Mega bits per second (Mbps) ring and a 1000 Mbps Ethernet Transparent Local Area Network Services (TLS) circuit. These circuits will enable secure access to Commonwealth systems, data and records located at the data center from VITA's designated locations.

Upon arrival of the signal at the data center from the aforementioned circuits, the signal traverses a network firewall for a security check, and then goes into a main core switch that will route it toward its destination. The core switch is equipped with monitoring systems that will provide ongoing periodic reports on network capacity and utilization, as well as detailed specialized reports on demand. The reports will provide data to determine compliance with Service Level Agreements (SLAs), and by performing trend analysis, Northrop Grumman can determine any required actions to improve network performance. This may include adding capacity to the network.

Northrop Grumman will perform all asset and acquisition provisioning services for the network, including engineering, based on the reports generated by the Network Operations Center (NOC). This includes but is not limited to build-out, relocation, testing, and production activation. All network activities performed by Northrop Grumman will be presented to VITA for review and approval prior to implementation to ensure operational success and customer satisfaction.

9.3 VITA Office Space Requirements

Northrop Grumman will provide office facilities in accordance with the specifications outlined in Schedule 4, Section 3.0, VITA Office Space Requirements, and will coordinate designs with VITA prior to execution.

9.3.1 Facilities Office Environment

☑ Check if Vendor agrees with all elements of Schedule 4 – Section 3.1, except for the elements listed in **Exhibit 9-9**.

Facilities Office Environment Issues			
Item #	**Reference #**	**Issue**	**Vendor Proposed Solution/Rationale**
Redacted from Public Document – Proprietary and Confidential			
End of Table			

Exhibit 9-9 Facilities Office Environment Issues (Table 58)

9.3.2 Facilities Management

☑ Check if Vendor agrees with all elements of Schedule 4 – Section 3.2, except for the elements listed in **Exhibit 9-10**.

Facilities Management Issues			
Item #	**Reference #**	**Issue**	**Vendor Proposed Solution/Rationale**
Redacted from Public Document – Proprietary and Confidential			
End of Table			

Exhibit 9-10 Facilities Management Issues (Table 59)

9.4 Backup Data Center Requirements

9.4.1 Title Redacted

Redacted. The building will be designed and constructed as a help desk and backup data center, with 20,000 square feet of mission-critical raised floor. The total area of the building will be 131,000 square feet located on a 12.4-acre site. The data center will meet or exceed standards for backup facilities provided by other disaster recovery vendors such as SunGard™. Security will be provided using latest technology video surveillance equipment, access control badge readers, and a controlled reception area.

A more detailed description of the Northrop Grumman plan for our enterprise help desk and backup data center facility can be found in **Section 11.3.13.9** of this proposal.

☑ The Northrop Grumman Team has added an additional exhibit, which shows that we agree with Schedule 4, except for the elements listed in **Exhibit 9-11**.

Backup Data Center Facilities Requirements Issues			
Item #	**Reference #**	**Issue**	**Vendor Proposed Solution/Rationale**
Redacted from Public Document – Proprietary and Confidential			
End of Table			

Exhibit 9-11 Backup Data Center Facilities Requirements Issues (Table 60)